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Deterministic Affect Encoding and Update Mechanics

by [Nick Clark](#) | Published March 27, 2026 | [PDF](#)

State transition function producing identical outputs given same agent state, observations, and policy, with every update recorded in lineage for reproducibility.

What It Is

The affective state update function is deterministic: given the same agent state, the same observation, and the same policy, it produces identical output. Every update to every affect dimension is recorded in the agent's lineage, making the complete affective trajectory reproducible from the initial state and the sequence of events.

This determinism applies to both positive and negative updates, to decay computations, and to all cross-primitive effects. There are no stochastic components in the affective state machinery.

Why It Matters

Reproducibility is essential for governance, auditing, and dispute resolution. If an agent's affective state contributed to a controversial decision, the complete chain of affective updates leading to that state must be reconstructable. Non-deterministic affect would make this reconstruction unreliable.

Deterministic encoding also enables testing and validation. Agent behavior under specific affective conditions can be replicated exactly, allowing systematic evaluation of how affect modulates decisions across identical scenarios.

How It Works Structurally

The update function receives the current affective field state, the triggering event, and the policy reference. It computes new values for affected dimensions using defined formulas with no random components. The output includes the new dimension values and a lineage entry recording the event, the prior state, and the computed change.

Decay computations use deterministic time-based functions anchored to the last update timestamp. When an agent migrates between substrates, the receiving substrate can verify that the affective state is consistent with the recorded lineage by replaying the update sequence from the last checkpoint.

What It Enables

Complete auditability of agent emotional trajectories. Governance bodies can inspect not just what an agent decided, but what affective state influenced that decision and how that state accumulated over time. This is essential for regulated domains where decision provenance must be demonstrable.

Training and calibration processes that can isolate the effect of affective modulation from other factors, enabling principled refinement of affect parameters.

[Affective State All 21 steps →](#)

Emotion as a computational primitive, not a simulation.

Primary Technical Disclosure

[◦ Affective State as a Deterministic Control Primitive for Semantic Agents](#)

Secondary Technical

[◦ Affective State as Seventh Canonical Field](#) ◦ [Named Control Field Modulation Architecture](#) ◦ [Affect-Modulated Promotion Thresholds](#) • [Deterministic Affect Encoding and Update Mechanics](#) ◦ [Emotional Decay Curves With Hysteresis](#) ◦ [Entropy-Governed Valence Stabilization](#) ◦ [Affective Inheritance in Delegation Chains](#) ◦ [Emotional Quarantine and Volatility Management](#) ◦ [Affect-Modulated Trust Slope Validation](#) ◦ [Biological Signal-to-Affective Coupling](#) ◦ [Affective Contagion in Multi-Agent Systems](#) ◦ [Affect-Modulated Discovery Traversal](#) ◦ [Affect-Governance Separation](#) ◦ [Policy-Bounded Affective Updates](#) ◦ [Affect as Cross-Primitive Input](#) ◦ [Affect-Modulated Inference Integration](#) ◦ [Substrate-Agnostic Affect Deployment](#) ◦ [Pseudonymous Emotional Operation](#) ◦ [Temporal Cognition Field](#)

Applications (General)

[◦ Companion AI That Maintains Emotional Consistency Across Sessions](#) ◦ [Therapeutic Agent Affect Management Under Clinical Constraints](#) ◦ [Affective State for Customer Service Agents](#) ◦ [Affective State for Elderly Care Companion Agents](#) ◦ [Affective State for Crisis Response Agents](#) ◦ [Affective State for Negotiation Agents](#) ◦ [Affective State for Educational Tutoring Agents](#) ◦ [Affective State for HR and Recruitment Agents](#)

Applications (Specific)

[◦ Replika's Emotional Memory Is Stateless](#) ◦ [Character.ai's Personality Problem Is Deeper Than Prompting](#) ◦ [Woebot's Therapeutic Affect Has No Persistent State](#) ◦ [Elomia's Empathy Resets Every Session](#) ◦ [Hume AI Measures Emotion but Cannot Govern It](#) ◦ [Affectiva Reads Faces but Not Emotional Trajectories](#) ◦ [Cogito Scores Conversations Without Emotional State](#) ◦ [Beyond Verbal Decoded Voice Without Building Emotional Memory](#) ◦ [EmotiBit Captures Physiology Without Affective Governance](#) ◦ [RealEyes Measures Attention Without Emotional Persistence](#)

[Affective State overview →](#)

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